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EXAMINER

LAWRENCE JR, FRANK M

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

05/22/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 8, 9, 12 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The original disclosure does not contain basis for capacity gains at partial pressures of less than 2 mbar, between 5 and 10 mbar, or greater than 10 mbar. Claims 9 and 12 are rejected for depending from a rejected parent claim.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 8, 9, 12 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 8 and 13 are unclear because they do not define "adsorption capacity gain." The instant specification defines it as a gain in adsorption capacity for carbon dioxide in cm³/g for 99.5% (greater than or equal to 98%) sodium-exchanged zeolite compared with 94.5% or 97.5% (less than 98%) exchanged. Claims 9 and 12 are rejected for depending from a rejected parent claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the European reference (EP 0718024 A2) in view of the European reference (EP 0294588 A2).

7. EP '024 discloses a process for removing carbon dioxide from an air stream, comprising removing water with an alumina drying agent, then subjecting the dried air to a PTSA cyclic adsorption system containing a low sodium X zeolite (page 2, lines 39-57, page 3, lines 8-49). The zeolite has a silicon to aluminum atomic ratio of 1.0-1.15 and can have substantially all of its exchangeable cations sodium ions or may have potassium ions. Adsorption can be carried out at 30-60° C and 1-10 bar, and desorption can take place at 10-200° C and 100-2000 millibar (page 3, lines 50-58). The instant claims differ from the disclosure of EP '024 in that the zeolite is agglomerated with a binder with a residual inert binder content of less than or equal to 5%.

8. EP '588 discloses a zeolite X for removing carbon dioxide that is formed into pellets with 1-40% by weight of clay binders (page 2, lines 35-37, page 2, line 51 to page 3, line2). It would have been obvious to one having ordinary skill in the art at the time of the invention to pelletize the zeolite of EP '024 in order to provide an adsorption bed having a low pressure drop due to open spaces that exist between zeolite pellets, and to use a low inert binder content in order to maximize the amount of adsorbent available for air treatment. The prior zeolite will inherently have an increased carbon dioxide adsorption capacity at partial pressures of about 2 mbar

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compared to greater pressures of 5 mbar or more over zeolites with lower sodium exchange rates because it has the same composition as the zeolite used in the instant invention.

Response to Arguments

9. Applicant's arguments filed April 17, 2008 have been fully considered but they are not persuasive. Applicant argues that the prior art does not disclose the adsorption capacity gain recited in claims 8 and 13. The examiner agrees that comparative carbon dioxide adsorption capacity gains are not recited in the prior references, however such gains would be inherent because the prior zeolite has the same composition as the zeolite used in the instant invention because it is an LSX type zeolite that has substantially all of its exchangeable cations being sodium. The secondary reference is only used as a motivation for using a binder in low amounts so that it does not appreciably affect adsorption performance. Claim 1 contains no recitation of adsorption capacity gain properties.

10. Applicant also argues that the prior references do not disclose a regeneration temperature of 100-120° C, however EP '024 discloses a desorption temperature of 10-200° C.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank M. Lawrence whose telephone number is 571-272-1161. The examiner can normally be reached on Mon-Thurs 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Frank M. Lawrence/
Primary Examiner, Art Unit 1797

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